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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • MARCH 6, 1948

White House Welcome

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ASTRONOMY

Lichens Possible on Mars

Observations were made by infrared heat-light reflections from the planet which showed that there were no trees, flowers or ferns.

➤ IMAGINE a mountain peak twice as high as Mt. Everest, sticking up 10 miles in the stratosphere. That would be the earth's closest approach to a Martian landscape, as judged by the latest observations upon the planet Mars made at McDonald Observatory, Fort Davis, Tex.

No trees. No flowers. Not even ferns. The only possible life would be mosses and lichens such as cling to lofty, frigid peaks here on earth. There is no chance of the higher life forms such as the most primitive animals, much less anything like a man or a Wellsian monster.

Observations of infrared heat-light reflections from the planet, seen through the McDonald 82-inch telescope, are consistent with the existence there of mosses and lichens in the green areas of the planet.

With Mars 63,000,000 miles away and closer than at any other time in 1947, 1948 and 1949, Dr. Gerard P. Kuiper, director of the McDonald Observatory, used new heat-light measuring instruments to scan the magnified disk.

The polar cap is not "dry ice" or carbon dioxide snow as some astronomers suggested, but is probably ordinary ice or snow. This was indicated by the reflection of light in the spectrum beyond 1.5 microns, where the color was black as are water, snow and ice and not white as carbon dioxide snow would be.

Carbon dioxide does exist in the Martian atmosphere, as discovered at McDonald Observatory last October. Mt. Wilson Observatory observations have shown that no appreciable amount of oxygen exists on Mars, but its lack would not rule out the growth of mosses and lichens on the planet.

Another Martian mystery must be solved before even the lowest forms of life are indisputedly possible. Nothing in the Martian atmosphere has yet been found to filter out the ultraviolet rays of the sun that would be fatal to all life. Nevertheless something does cause the Mars "air" to be opaque so far as the ultraviolet light can be measured. Dr. Kuiper and his colleagues have found that it is not sulfur dioxide, which is a heavy gas produced by volcanoes and meteoric impact. Small amounts of it could absorb the fatal ultraviolet. Very sensitive spectroscopic tests showed no trace of sulfur dioxide on Mars or the moon.

Ozone in the upper air keeps life on the earth from being killed by a super-sunburn but this form of oxygen cannot be a shield to Mars as no oxygen exists there.

The ultraviolet light may be stopped on Mars by fine dust in its atmosphere swept up by winds that are known to attain at least 30 miles per hour in some cases.

It never rains on Mars. There are no lakes or oceans, not even any liquid water. The water in the form of vapor or frost would be sucked up by lichens from the air.

The temperature rises to only a little above freezing during the day at the Martian equator and drops to 80 to 100 degrees below zero Fahrenheit by night.

Conditions on Mars are comparable to those on earth at an elevation of 50,000 feet.

This new picture of Mars may be a forecast of things to come for the earth itself. Mars is a worn-out planet with conditions that probably will prevail on earth many millions of years hence when most of our atmosphere has been lost and mankind has long since disappeared.

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GENERAL SCIENCE

Winning Science Project Puts Boy in Hospital

➤ SCIENTIFIC experiments on straw for insulation material won 17-year old Jim Richardson a trip to Washington to compete for a college scholarship—and the same experiment almost prevented him from coming.

Jim was one of the 40 winners of the Seventh Annual Science Talent Search. He attended the five-day Science Talent Institute where $11,000 in Westinghouse Science Scholarships were awarded.

But the stuff that broke the camel's back, almost brought both fame and bitter disappointment to the local teen-age scientist. His description of his work in converting wheat and oat straw into insulation material helped place him among the winners of the Science Talent

QUIZZING THE JUDGE—Dr. Harlow Shapley, director of the Harvard College Observatory and president of Science Service, is answering the questions put by some of the Science Talent Search winners.

Search. Then, Jim found himself in a hospital with a fungus infection of the hands. Doctors diagnosed the trouble as due to handling the straw.

After treatments with penicillin and aluminum acetate solution, his hands began to heal. Jim left the hospital just in time to pack for his trip to Washington.

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MEDICINE

Save Six Out of Seven

➤ SIX out of seven babies and children suffering from tuberculous meningitis have been saved by treatment with streptomycin and promizole.

Their cases are reported by Drs. Edith M. Lincoln, Thomas W. Kirmse and Estelle De Vito of Bellevue Hospital and New York University in the *Journal of the American Medical Association* (Feb. 28).

The six children who survived this usually deadly disease have not been under observation long enough for their doctors to call them "cured." But they are all living three to eight months after the start of the treatment and they are all normal mentally with no signs of nerve damage except mild ones in two.

"Streptomycin," the doctors state in their medical report, "has revolutionized our attitude toward tuberculous meningitis. Before this antibiotic was discovered the outlook was hopeless."

Some patients have apparently been cured by the mold remedy alone. But in some cases reported by other physicians, although the disease was apparently arrested by streptomycin, the patients later relapsed and died. And some patients who survived were left with extensive damage to the nervous system.

The decision to combine streptomycin with promizole was based partly on results of the combined treatment when given to laboratory animals. Using the two together, Dr. M. I. Smith of the National Institute of Health had reported, heightens the action of the two remedies beyond the expected value of either alone.

Promizole, which is in a way a relative of the sulfa drugs, brought encouraging results in the treatment of another kind of tuberculosis, the New York doctors had found. Promizole can apparently be given safely and effectively over a period of years, and can be taken by mouth, but it is slow to take effect. Streptomycin, on the other hand, acts quickly on the TB germs but cannot be given by mouth and is more toxic than promizole. It has also the disadvantage that the germs may develop resistance to it. By giving the two drugs together the doctors thought they might get the benefit of the peculiar advantages each has.

The results seem to bear this out and the doctors hope others will be encouraged to try the combined treatment.

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BACTERIOLOGY

Expect to Conquer Viruses

➤ VIRUSES, the submicroscopic, almost-alive chemical compounds that cause many serious diseases in plants, animals and man, may some day be conquered with chemical weapons, as bacteria have been overcome by the sulfa drugs and such mold-derived compounds as penicillin and streptomycin. Experiments on the tobacco mosaic disease of plants, reported in *Science* (Feb. 27) by Dr. William N. Takahashi of the University of California, seem to point in this direction.

Dr. Takahashi used malachite green, a well-known synthetic dye, in very dilute solution on tobacco leaves inoculated with the mosaic virus. The number of diseased spots appearing on the treated leaves was a very small fraction of the number that appeared on untreated leaves used as controls.

In these experiments, the dye was used as a research tool rather than as a possible remedy. Dr. Takahashi knew that viruses can multiply only in living cells, and reasoned that they steal the use of certain enzymes, which are compounds used by the cell in its own life processes, to carry on the parasitic life of the viruses. He knew that malachite green blocks the action of some enzymes, and yet is not too poisonous to the whole plant. Results of his work are evidence in favor of his hypothesis. Further evidence is found in the fact that malachite green has no effect on solutions of virus in water, with no cells or enzymes present.

Hitherto no chemical treatment has been effective against virus diseases, with few exceptions. However, if further research with other chemicals indicates exactly which enzymes in the cell the virus borrows for its own nefarious purposes, a long step towards the conquest of the viruses will have been taken.

"Meanwhile," concludes Dr. Takahashi, "the possibility that malachite green may be of some value in the chemo-therapy of virus diseases must not be overlooked."

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GENERAL SCIENCE

Science Talent Institute

Eminent scientists participated in event held in Washington for the 40 high school winners of the honor-trip. Radio study originates new branch of astronomy.

See Front Cover

➤ FORTY boy and girl winners, the year's top talented young scientists of America, attended the five-day Science Talent Institute in Washington (Feb. 27-March 2) as the culminating event in the Science Talent Search for $11,000 in Westinghouse Science Scholarships. This educational event is conducted by the Science Clubs of America, administered by Science Service.

Upon their arrival in Washington, the young scientists were welcomed at the White House by Mrs. Truman, as shown on the cover of this week's SCIENCE NEWS LETTER.

This issue of the SCIENCE NEWS LETTER contains some of the addresses made by leading scientists. Further coverage of the Institute's activities will be reported in the next issue when the scholarship winners will be announced.

New Branch of Astronomy

➤ RADIO broadcasts to and from the heavens have opened up a new branch of astronomy, Dr. Harlow Shapley, director of the Harvard College Observatory and president of Science Service, told 40 young scientists of tomorrow.

The scientist told the winners of the Seventh Annual Science Talent Search that radio and electronics are bringing new discoveries to the oldest of the sciences, astronomy.

Dr. Shapley, Dr. Wendell M. Stanley of the Rockefeller Institute for Medical Research, and Dr. Karl Lark-Horovitz, head of the department of physics at Purdue University, discussed "Great Future Problems of Science" as guests of Watson Davis, director of Science Service, on Adventures in Science, heard over the Columbia network.

The Harvard astronomer said that microwave or radio astronomy of the future included exploration of the ionosphere and its various layers, measurement of the heights, numbers and motions of the shooting stars in our earth's atmosphere, bouncing of radio waves off the moon, solar noise, cosmic static and cosmic radiation.

Reflecting radio waves off the moon "is not nearly as silly as it sounds," Dr. Shapley cautioned the high school scientists, "because this two-way connection with the moon will help us explore our own upper atmosphere and especially the so-called empty space between the earth and the moon."

The astronomer disclosed that he hopes to use radio noises from the region of the constellation, Sagittarius, in the Milky Way as a part of an exploration of the "Hub of the Universe," which lies more than 20,000 light years away.

Not only is this region sending us the light of billions of stars, but it apparently is broadcasting in the 10-meter band, Dr. Shapley said.

Dr. Stanley, a Nobel prize winner in medicine and physiology, told the science-minded high school audience that studies on viruses may not only help fight disease, but they may also solve some problems relating to the nature of life.

Conservation Necessary

➤ "YOUNG people who will be among the leaders in science tomorrow must share in the responsibility for the conservation movement which will be necessary for our continued progress and prosperity."

This challenge to leadership in science outdoors as well as science in the laboratory was laid before the 40 finalists in the Seventh Annual Science Talent Search by Dr. Clarence Cottam, assistant director of the U. S. Fish and Wildlife Service.

At present, Dr. Cottam stated, our wildlife resources are declining decidedly in such items as waterfowl, grouse, pheasants, muskrats and rabbits, while at the same time the population of crows and such carnivores as coyotes, mink, foxes and raccoons are building up to a peak. These imbalances are not always due to over-shooting by sportsmen, he pointed out; desirable wildlife populations may be decimated through changing uses of the land, such as cutting down forests and planting crops in the cleared land, drainage of marshes

ON THE BEAM—This shows the group of high school winners at the broadcasting studio where leading scientists answered their questions about astronomy, viruses and physics.

and shallow lakes, and clean cultivation with the eliminating of game-sheltering brushy corners and fencerows.

"The best approach to maintaining high population of fish and wildlife is by natural means," Dr. Cottam declared. "Artificial propagation usually is comparatively inefficient and expensive."

Shapes of Molecules

➤ "TELL me what shape you are and I'll tell you what you can do" might well he said of many molecules, especially the larger ones. Foreknowledge of a compound's properties through a study of the shapes of its molecules was explained to the winning group by Prof. Hugh S. Taylor, dean of the graduate school at Princeton University.

Silk, for example, is a liquid with soluble molecules while it is in the silkworm's glands, Prof. Taylor said, but as soon as it has been spun it solidifies into an insoluble condition. Study of the fibroin molecules that are the basis of silk shows that they are elongated affairs, divided into thirds by hinged joints. When they are folded up like a carpenter's rule they are soluble; during the spinning process they become stretched out and achieve insolubility.

Art Affected by Science

➤ MODERN ART, such as a Picasso picture, arises from the influence of Einstein's theory of relativity, just as surely as the atomic bomb's conversion of mass into energy stems from another Einstein discovery.

National Gallery of Art lecturer Grose Evans finds that art, like the rest of the world, is affected by advances in science and technology.

Explaining the interrelations of art and science to the 40 Westinghouse scholarship winners in the Seventh Annual Science Talent Search, Mr. Evans said that art and science are far more separate today than centuries ago. In earlier times there was a confusion between the two, today art and science are distinct.

"An artist is a scientist in recording appearances," Mr. Evans contended, "whereas the physicist or chemist is little concerned with how things look."

The generally-accepted diagram of the atom is an outstanding example of the way scientists attempt to render comprehensible something we cannot really perceive. We cannot really paint a picture of an atom because it is beyond our experience, he stated. The result is that the diagram does not look like the atom, but it does help us understand the atom.

Examples of scientists who were also among the world's greatest painters are Leonardo da Vinci and Albrecht Durer. The art of both was influenced by their scientific interests.

Through proportion, "the magical rule of numbers" crept into art, Mr. Evans said. Leonardo believed that all figures should be geometrically exact and fitted them into geometric designs. Durer, particularly in his earlier work, attempted to draw a normal person then analyzed the figure to work out geometrical principles.

Modern conceptions of space and the universe have influenced modern art, Mr. Evans pointed out. The Copernican system, which placed the sun rather than the earth at the center of the solar system, and the Einstein theory of relativity both have been reflected in the art of their times.

Need for Basic Research

➤ DON'T specialize too soon or too narrowly, and when you do concentrate on one research subject let it be one of the basic sciences rather than something of apparent "practical" application. This advice was given to the 40 winners of the Seventh Annual Science Talent Search by a veteran of an earlier Search, Raymond Schiff, who won the $2,400 Westinghouse Grand Science Scholarship in 1943.

Mr. Schiff practices what he preaches, for at Harvard, where he graduated last year, his major was nuclear physics. He is at present a junior engineer in the Westinghouse Research Laboratory at Pittsburgh, but intends to begin graduate work at the University of Illinois next September.

No matter how earnest a student may be in pursuit of his science, said Mr. Schiff, he must not let it absorb him completely. He cited the case of one intense fellow-student who considered all courses outside his own special line of interest as "the bunk" and avoided them accordingly. Later he realized how lopsided he had made his training. A properly planned college career, the speaker declared, includes not only a good assortment of "cultural" courses but a reasonable amount of extra-curricular activities and social contacts.

The widely accepted notion that scientists are dry-as-dust recluses never was true for most of them, he asserted. The recluse scientist was always an exception, and he is becoming scarcer all the time, now that the world has realized the great importance and value of science in both war and peace. The really successful scientist is one who has learned to get along with people; he is a social and a political being as well as a scientist.

The scientist must be a functioning citizen if he is to survive as a scientist, Mr. Schiff continued. Science, he emphasized, can flourish and advance only in an atmosphere of freedom; under too strict control from any source it wilts and dies. The scientist's fellow-citizens are now in the mood to defend and promote science, but they cannot be reasonably expected to do much on behalf of science unless the scientist himself participates in their efforts.

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GENERAL SCIENCE

Winning Science Students Are of Mixed Parentage

➤ AMERICA'S traditional function as melting-pot of nationalities seems to have operated strongly in the parentage of the 40 top-flight high school seniors who were in Washington from Feb. 27 through March 2 for the finals of the Seventh Annual Science Talent Search for the Westinghouse Science Scholarships.

Although a majority of the 40 are of native American stock on both sides, it is not at all a large majority. Twenty-five of the students state that both their parents were born in this country; four have one native-born and one foreign-born parent each, and 11 are of wholly immigrant parentage.

Five of the winners were themselves born in Europe: One is Miss Ursel J. Blumenheim of Forest Hills, N. Y., who comes from Germany. Three New York boys were born in what was the Austro-Hungarian empire before World War I: Gerhard Rayna, who is of Hungarian stock; Walter J. Scheider, who was born in Czechoslovakia; and Kurt W. Kohn, born in Austria of Polish-Czechoslovak parentage.

The foreign-born parents represent a wide range of nationalities. Four of them came from Russia and four from Poland. Three each were born in Czechoslovakia, Greece and Hungary,

and two each in Armenia, Austria and Germany. France, Turkey and Yugoslavia are represented by one parent.

Small families are the rule. Among the 40 winners, 11 are only children, and 15 have only one brother or sister. Eight belong to three-child families, and two to families of four children. One girl and one boy can boast of four brothers or sisters each.

Professions of the fathers are highly varied. The list includes engineer, manufacturer, farmer, salesman, forester, patent agent, machinist, real-estate broker, restaurant manager, optometrist, builder, radio operator, export manager, wood technologist, accountant, appraiser, elevator manager, sheet-metal worker, missionary, teacher and school executive. Two paternal occupations have a unique look: green chain grader, and research analyst for the War Crimes Commission.

Twelve of the students' mothers have occupations outside their homes. Professions represented are teacher, musician, missionary, designer, editor, secretary, bookkeeper, social worker, sales clerk and corsettiere.

Four of the winners have only one parent living. Approximately 62% of the winners' fathers and 52% of their mothers attended college.

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GENERAL SCIENCE

Big-Game Hunting, Flying, Not for Modern Youth

➤ WHAT has happened to the boy who used to want to be a high-altitude flyer, an African big-game hunter or Antarctic explorer "when he grew up"?

Apparently, he is being replaced by a sober group of young people who value service to mankind higher than any other factor in the choice of a job. Boys—and girls too—today want a chance to continue in the same position year after year. They want to feel that they can work themselves up. They are concerned about the effect of the job on their health.

This new view of the ambitions of high school boys and girls and those in grades seven and eight is disclosed by a survey of more than a thousand students made by Dr. R. W. Edmiston of Miami University and Supt. C. H. Starr of the Arcanum, Orio, schools.

Adventure is pushed down to the bottom of the list of considerations important in picking a job. Kids nowadays don't want adventure—or say they don't. Neither do they want public acclaim. Or responsibility.

What they do want is security and freedom from political strings. And even those who would like a chance to travel want to be able to get home at night.

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MEDICINE

Skin Glow Test for Drugs

Persons suffering from such allergic conditions as hayfever or asthma can have the anti-histamine effect of new remedies determined by this method.

➤ A SKIN glow test for new drugs being developed as possible remedies for hayfever, asthma and other allergies is announced by Drs. Samuel C. Bukantz and Gustave J. Dammin of Washington University School of Medicine, St. Louis.

The test will determine the anti-histamine effect of the new drugs. Histamine is a chemical normally present in the body but when freed from its bound state in the body cells acts like a powerful poison and can produce severe shock. It is thought by many scientists to be the agent responsible for the symptoms in various allergic conditions. Many efforts to find chemical cures for allergies have been directed toward making drugs with an anti-histamine action.

The St. Louis scientists discovered, in the course of studies on sensitive, or allergic, states that when the dye, fluorescein, and histamine are injected into the forearm skin of normal persons, the skin glows under ultraviolet light for only four to 10 minutes. When the dye, fluorescein, alone is injected, the skin glows under ultraviolet for 30 to 40 minutes. And when fluorescein, histamine and an anti-histamine drug, benadryl, are injected, the skin glows for the same 30 to 40 minutes.

A test on a person with an allergy also showed the anti-histamine effect of the drug, benadryl. With fluorescein alone there was only a four-minute glow. With fluorescein plus histamine there was also only a brief period of glow. But fluorescein plus histamine plus benadryl gave fluorescence for 25 minutes, showing, the scientists state, "the neutralizing effect of the anti-histaminic drug." (*Science*, Feb. 27).

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SCIENTIFIC WORLDS TO CONQUER—Dr. Wendell M. Stanley of the Rockefeller Institute for Medical Research, a Nobel prize winner in medicine and physiology, told these future scientists that many problems are waiting for them to solve.

FORESTRY

Hardwoods Will Yield Pulp With New Process Method

➤ PAPER PULP from southern New England and New York hardwoods is possible with a new process developed at the Polytechnic Institute of Technology, the Technical Association of Pulp and Paper Industries was told at a New York meeting by Dr. Robert S. Aries of the Institute staff.

The process consists of treating the oak, hickory and other hardwoods with soda ash and sulfur dioxide, followed by a method of mechanical grinding. Besides making hardwoods available for pulping, this method, since it involves only mild chemical treatment, results in a much higher yield of pulp than conventional methods of pulping. These conventional methods rid the woods of the greater part of the lignin. Normal pulp yields are about 50%; with the new process 75% becomes pulp.

The pulps obtained from hardwoods are particularly suited for making high quality rayons, cellophane and plastics products. There is an extensive oak-hickory area within a few hundred miles of New York.

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PSYCHOLOGY

Breakup of Marriage Less Prevalent Among Educated

➤ DOES education break up marriages?

In an effort to answer this question, Prof. William F. Ogburn, of the University of Chicago, studied Census statistics. Divorces, he found, increase with education up to the college grade where the tendency is reversed. The figures, expressed in percentage that the number of divorced men aged 30 to 34 is of married men living with their wives, are as follows: Fourth grade or less, 1.7. Seventh and eighth grades, 1.9. High School graduates, 2.1. College graduates, 1.3.

For women, the figures are more striking: 2.6, 2.7, 3.7, and 3.3.

But the picture is quite different, Prof. Ogburn found, if you count all men whose wives are not present and accounted for in the home.

"It may be," Prof. Ogburn suggests, "that the persons interviewed do not always report when they are divorced."

At any rate whether the couple are "separated" but not yet divorced, or whether the wife is working in another place, traveling in a foreign land, in prison, in a hospital of some kind, or just missing, if she is not there the marriage may be considered as broken.

In this case, the higher the education the fewer are the homes with wives absent. The figures for men in the 30-34 age group are: 4.6 for fourth grade or less as against 3.2 for high school and 2.9 for college. For seventh and eighth grades the percentage is 3.8.

The corresponding figures for women show the same tendency for families with higher education to have fewer homes broken by separation: 6.1, 3.9, 3.1, and 3.1.

Even when the figures for divorces are combined with those for absent wives, the figures show the same downward trend with higher education—6.3, 5.7, 5.3, and 4.3. For men in the same age group (30-34), whose wives are absent or divorced, the percentage of those with less than a fifth-grade education is about half again as great as for those with a college education.

But Prof. Ogburn cautions against assuming that it is the education that holds husbands and wives together. It is known, he points out, that in general the better educated also have larger incomes. It could be that it is the higher income rather than the education that keeps the family together.

"The few indications I have been able to find in the Census data," he states, "suggest a closer relationship of family unity with high income than with high education."

Details of Prof. Ogburn's study will be reported in the *American Sociological Journal* in May.

Science News Letter, March 6, 1948

VETERINARY MEDICINE

Sulfa Drug Successful Against Poultry Disease

➤ A SULFA drug, sulfaquinoxaline, has been successfully used in the control of one of the most destructive of poultry diseases, coccidiosis, by a three-man research team at the Rhode Island State College, Kingston, R. I.

The drug, designated as "SQ" for convenience, was given to diseased birds in their feed. While untreated flocks suffered a 17% loss, the mortality among treated birds was cut to 2% or less.

The research team, consisting of Drs. L. C. Grumbles, J. P. Delaplane and T. C. Higgins, report their results in the journal, *Science*, (Feb. 20).

Science News Letter, March 6, 1948

IN SCIEN

PHYSICS

Scientist and Young Son Work on Watch Experiment

➤ A FAMOUS scientist and his 15-year-old son have made measurements which prove some old advice about handling your watch.

The advice is not to hang your watch up on a wall or bedpost. And this is especially important for the watch repairman who may hang your watch up when he is regulating it.

If a watch is hung up where it can swing freely, it may behave like a pendulum. And it can gain or lose as much as 10 to 15 minutes a day, new scientific experiments have shown.

The scientists who made the tests with watches are a unique father-son team. Dr. Edward U. Condon is director of the National Bureau of Standards and a famed atomic scientist. His eldest son, Paul, 15, is now in the ninth grade at Alice Deal junior high school in Washington, D. C.

About 10 years ago, Dr. Condon recalls, he read how the famous English scientist, Lord Kelvin, had discovered that his watch lost or gained because he hung it up on a bedpost at night. Dr. Condon thought it would make an interesting experiment to measure this pendulum effect. But he could not find the time to run the experiments.

Last summer, Paul, then 14, "wanted something to do," his father explains. So his dad gave him the problem of the swinging watches.

Paul worked without pay in the time section of the Bureau's metrology division during the vacation months measuring the oscillations of watches. The results were reported to scientists in a technical paper published in the *American Journal of Physics*. (Jan.).

The modest father denies that his son is anything more than a "regular boy." Currently, the young scientist is interested in photography, but his father is not ready to predict that the boy will grow up to be a scientist.

If you see watches swinging in a case on your watch repairman's wall, they may only be awaiting repair, Dr. Condon says. But if they are swinging when they are being regulated, the watches may lose or gain.

Science News Letter, March 6, 1948

NE FIELDS

GENERAL SCIENCE

Atomic Educational Group Needs Funds to Carry on

➤ IT COST $2,000,000,000 to build the atomic bomb, but a group of politically-conscious scientists, including many who worked on the atomic project, are finding $2,000 difficult to obtain.

The scientists, organized into the Federation of American Scientists, have been trying to make the American public "atom-conscious" and keep both scientists and laymen informed about such problems as atomic controls.

Now the Federation is threatened by a lack of funds.

"The instrument of the scientists for action in public affairs will be lost unless at least $2,000 is obtained beyond the dues in the next two months," a statement explained.

"It is true the international scene looks dismal, but it would look far worse, if Congress and the people see that 'even the scientists have quit!'," the Federation appealed.

Science News Letter, March 6, 1948

ARCHAEOLOGY

Indian Occupation Sites Discovered in Dam Areas

➤ MORE than 20 extensive sites of former Indian occupation have been discovered already in a survey of areas to be flooded for dam projects on the Savannah River in Georgia and South Carolina, the Smithsonian Institution reported.

Two scientists of the Institution, Carl F. Miller and Joseph R. Caldwell, made the discoveries at the Clark Hill project, just north of Augusta, Ga. Work on the project is underway, but scientists hope that extensive excavations may be made before the area is flooded.

Archaeological exploration of the Clark Hill area is the first of a series of studies which will be made in prospective lake sites on the Savannah. Other projects include Anthony Shoals, Tallow Hill, Goat Island, Middleton Shoals, Hartwell, Old Pickens and Newry Dam.

The region is little-known before the time of the early colonists. At the beginning of the Christian Era, wandering hunters are believed to have lived along the Savannah River. Agriculture and village life were probably not introduced until a few hundred years before Columbus, when Indians from the Mississippi Valley came to the area.

Details of the cultures of the Savannah are buried in the sites which scientists hope to uncover before the locations are buried under man-made lakes.

Science News Letter, March 6, 1948

PHYSIOLOGY

Freeze-to-Death Test Shows Pigeons Toughest

➤ RATS and mice freeze to death rather easily, but pigeons hold out much longer. These are among the results of a series of experiments with various warm-blooded animals, carried out in the Cold Room of the Harvard Fatigue Laboratory by a four-man team working for the Army Quartermaster Corps.

Mice, rats and rabbits, canaries, pigeons and chickens were placed in cages kept at a temperature of about 35 degrees below zero Fahrenheit, and the times it took for them to die were carefully recorded.

Mice succumbed most quickly, dying in less than 25 minutes. Canaries were next, surviving for only 36 minutes. White rats lasted from three-quarters of an hour to two hours. Some rabbits died in three and one-half hours, while others held out for as much as six and one-half hours.

Great spread in survival-time was shown by white Leghorn chickens. Some of them died in less than three and one-half hours, but "toughies" managed to stay alive for 29½ hours.

Most resistant of all the animals tested were Army carrier-pigeons. None died in less than 22 hours, and one lived for 78. This resistance in pigeons, incidentally, may offer a clue to the high survival of half-wild park pigeons under tough city conditions.

None of the animals hopped or fluttered around in an effort to keep warm.

The research team consisted of Dr. S. M. Horvath of the University of Pennsylvania, Dr. G. E. Folk of the Quartermaster Corps and Drs. F. N. Craig and W. Fleischmann of the Army Chemical Center. The work was done as a function of the Environmental Protection Section, Research and Development Branch, of the Quartermaster Corps., and was reported in *Science* (Feb. 13).

Science News Letter, March 6, 1948

ELECTRONICS

New Rectifier Tube Contains Cesium Vapor

➤ A NEW highly-efficient rectifier tube to change alternating electric current to direct current contains the vapor of cesium metal and has its cathode surface of cesium coated on nickel, General Electric reveals.

It has long life, and gives better than 98% efficiency, compared with 94% in some of the rectifiers now in common use, according to Dr. Albert W. Hull, under whom it was developed in collaboration with E. E. Burger and R. E. Turrentine of GE research laboratory.

The emission of electrons from the cesium, coated on the nickel surface, even at relatively low temperature, is one of the most copious known, Dr. Hull states. There is no appreciable evaporation of the nickel, and the coating of cesium is continually renewed from the vapor in the tube.

Cesium is a silver-white metallic element belonging to the potassium family. It gives up one electron more readily than any other element, hence its use as the light-sensitive film in photo-electric cells.

Science News Letter, March 6, 1948

ASTRONOMY

Paths of Major Planets To Be Calculated Exactly

➤ THE paths followed by Mars, Venus and the other nine major planets will soon be exactly calculated. The most modern electronic calculators yet developed will be used for this huge, long-range research project, states Dr. Dirk Brouwer, director of the Yale University Observatory.

So extensive are the calculations involved that the United States Naval Observatory, the Watson Scientific Computing Laboratory in New York and Yale University have entered into a cooperative enterprise with the support of the Office of Naval Research.

The study of the motions of the major planets, begun at Yale last year, will be speeded up through use of the latest in calculators, the Selective Sequence Electronic Calculator announced only a few weeks ago. Theories of astronomy which have been in existence for the past 50 years have been augmented by an accumulation of accurate observations. A new investigation should considerably improve our knowledge, Dr. Brouwer reports.

Science News Letter, March 6, 1948

NUCLEAR PHYSICS

"Much Shall Be Required"

Well-qualified youth is needed in all fields of science, 40 boys and girls were told at the Awards Banquet, which culminated the Science Talent Search.

By W. W. WAYMACK,
Member, U. S. Atomic Energy Commission

Excerpts from an address delivered at the Awards Banquet of the Science Talent Institute in Washington, D. C.

➤ WHAT I have to say this evening is intended primarily for just 40 persons in this large room. The rest of you are welcome to listen if you choose. But for good and obvious reasons I am addressing directly the 40 youngest members of my audience

To you fortunate 40, however, I am speaking only because you are representatives of all young people of your age and interests in the country. You are here only as the lucky survivors of a particular screening process.

The permanent task of running the Atomic Age is appropriately one for youth. We present members of the Commission must acknowledge ourselves to be venerable—we average 51 years. But we are deliberately building an organization of young men to enable us to deal with new problems of great complexity and of immeasurable importance to all our people.

In this procession of essential youth, places are reserved for you and other science-minded young men and women like you.

Youth and Revolution

The war-hastened birth of usable atomic energy is generally recognized as a revolution; and young people are traditionally the riders of revolution's wild horses.

I do not need to stress to you that our primary needs, for the long pull, is not the guarding of "The Secret", as I sometimes find necessary in addressing audiences of your elders. You know without needing to be told now that while much information about our atomic energy development must necessarily be kept "restricted" (official gobbledegook for various grades of secrecy) the basic facts of atomic physics have been in the books, foreign as well as American, for some years. Anybody who can read a page of modern physics or mathematics can learn of the fundamental contributions of Niels Bohr, and Fermi, and Szilard, and Meitner, and Einstein and all the rest.

Yet in another respect, and a very important one, all these openly published works are in a restricted category. For only the educated eye can read these pages and only the trained mind can understand their contents. The number of persons who have seen an atom bomb, or helped to put one together, is not large. Even so, it may possibly be larger than the number of Americans who have a really good reading knowledge of the scientific language in which the underlying facts of all atomic energy are stated. We have altogether too few such trained minds. We must find more of them, and soon, among the young men and women who are now in high school and college.

Need of Scientists

Refilling the ranks of atomic scientists is of course not the only responsibility of today's science-minded and science-talented young people. The world has need of workers in the whole alphabet of the sciences, from astronomy to zoology, in fields not yet touched by atomic energy as well as in those already being revolutionized by it, and in all the varied applications of science—medicine, engineering, agriculture, forestry, and all the rest. The harvest is indeed great, and the laborers far too few. It is to be hoped that public aid and private aid, too, for the training of scientists and the support of their research will soon vastly extend the field which the Science Talent Search has so brilliantly pioneered.

The Atomic Energy Commission, appreciating the importance of building up a corps of thoroughly trained young scientists in fields affected by the utilization of atomic energy (and that means, or seems likely soon to mean, just about all fields) has undertaken to do some searching on its own account for science talent at the college-graduate level. Altogether we expect to offer graduate fellowships to 355 young men and women, most of them in their second or third year of graduate work, but some already with their doctors' degrees. A total of $2,500,000 has been set aside for the first year of this program.

Let me give you a quick sketch of the responsibilities and activities of the Atomic Energy Commission:

The Congress and the Executive of the United States, by the law that became effective on August 1, 1946, made the development and use of atomic energy in this country a government monopoly. It set up the Atomic Energy Commission, and provided for a General Manager and his staff working under the Commission.

A.E.C. Responsibilities

On the Commission was put responsibility in the whole range of atomic energy, from the procurement of raw materials wherever they might be reached on earth to and including the production of atomic weapons, to and including the development of power for peaceful uses, to and including the then unforeseeables. The Commission, for the people of the United States, owns and controls all fissionable materials. It owns and directs operations of our atomic energy industry, which produces fissionable materials. It controls information as well as materials, much of the information necessarily being kept secret. It is under orders to conduct atomic energy research on a great scale and with real drive, and to see that research is pressed by others with its aid. Its real job, almost incredibly complex, is to get ahead, all along the line.

We have four main installations and rather numerous smaller ones. Three of them, largest and most conspicuous, are primarily production plants and one is a proving ground. At Oak Ridge, Tenn., which was and is the largest of those strange anomalies, "company towns" owned by the government, the principal production activity has been the separation of uranium 235 from its more abundant isotope, uranium 238. At the Hanford, Wash., plant some uranium 238 is converted into plutonium. The Los Alamos, N. M., plant is the one place where atomic bombs are made;

W. W. WAYMACK

naturally I can't talk about that. And far out in the Pacific, at Eniwetok atoll, is the new proving ground for routine tests.

Production of fissionable materials is by no means the only activity at Oak Ridge. It is also a great research center, one of three national atomic research laboratories, involving participation of both industry and universities. The two other national laboratories are the Brookhaven laboratory on Long Island, operated by a group of Northeastern universities, and the Argonne laboratory near Chicago, in which 29 universities participate.

Radioactive Materials

In one part of the National Laboratory at Oak Ridge intensive work is being done on methods and means for safeguarding the health of persons who work with radioactive materials—and they are dangerous, as X-rays are dangerous, or radium. A fine record of safety in this work, I may add, has been made.

Another of the Oak Ridge laboratory establishments is the recently opened Biological Laboratory, where a staff of brilliant researchers are pioneering in work on the effects of fissionable materials and their radiations on living animals and plants. Still another is the center for distribution of radioactive and stable isotopes for research in university and other research laboratories both in this country and abroad. We sell radioactive isotopes of a large number of chemical elements to institutions needing them in their research problems. Requests for radioisotopes are reviewed and approved by a special allocations committee, and in case of foreign distribution a progress report on the results of the investigations is required every six months.

At Berkeley, Calif., is another very important laboratory, the "Radiation Lab," which has done magnificent things in the past and which will do more of them in the future. At Iowa State college, in my own state, work of which the same could be correctly said, goes on with our support. These are not all; but I am not trying to be comprehensive.

Wide Range of Research

Thus you will see that research in atomic energy, all phases, is being conducted on a wide range of bases, from work requiring large teams of men and the most massive facilities, available only in one or a few places, to one-man problems in small colleges or remote agricultural experiment stations. Some of the problems are so involved with national security that their very nature cannot be discussed; others are so open that you can go and kibitz over the researcher's shoulder—if he'll let you.

I have already mentioned research on atomic power. I can't be very specific about possibilities here, except to say that immediate application is not in prospect, and that when it does come it seems likely to be in rather large-scale installations. Stationary power plants, especially where conventional steam and water power are not cheaply available, and perhaps propulsion for warships, are the likeliest initial efforts. Some rather difficult but, we believe, not insuperable problems have to be solved first, and those we are "at."

We have certainly progressed if we are able to work toward the use of this newly available form of energy for constructive purposes within a couple of years after its first use for destructive purposes. Remember, the first use of expansive thermal force confined within a cylinder was to push cannon-balls, and it was about 400 years before people got around to using the same force in the modified form of steam to push a piston to do useful work, and more than 200 more before an engine directly utilizing explosions was developed. So you really shouldn't be impatient about our slowness in developing atomic power.

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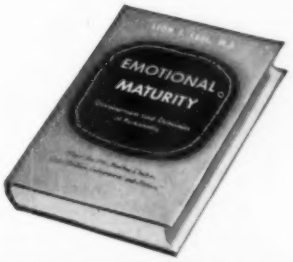

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Do You Know?

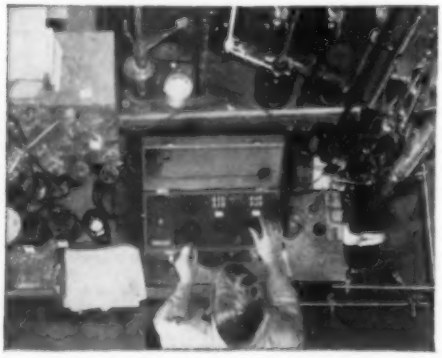
Chlordane is an American-made insecticide effective in killing grasshopper invasions.

A new plant-growth inhibitor, and possibly a *weed-killer,* has been obtained from a Southwestern desert plant called brittle bush.

Household *moth larvae,* that damage clothing, are hatched summer and winter, but the time required to hatch the eggs of the moth is greater in cold weather than when warm.

The plant that produces *mace,* widely used spice, produces nutmeg also; mace is the covering which envelopes a part of the shell of the nutmeg and one can not be grown without the other.

A chemical compound, relatively new commercially, is claimed as a valuable aid in soaps and detergents to make white clothes stay white longer; it is sodium carboxymethyl cellulose, called *Sodium CMC* for short.



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present is the indirect one involved in the employment of what is becoming known, even in everyday discussions, as "tracers." Exposing chemical elements to bombardment with atom-particle streams of various kinds renders them, in turn, radioactive. Thereafter they can be detected, even in smaller quantities, by instruments such as Geiger counters or electroscopes, or in some cases simply with photographic film. Compounds of these radioactive elements can thus be traced wherever they go, which is why they are called tracers.

Tracer Elements

Tracer elements have been a godsend to plant physiologists, and to that outdoor application of their science which we call agriculture. So seemingly simple a thing as the rise of sap in plants has for ages been a riddle; we did not know how fast it went, with any real accuracy, and we did not know at all what paths it followed. Now we are beginning to find out. An even denser mystery surrounded the making of sugars, starches and other foods in the green leaf, on which we all depend for our very lives. Now we prepare radioactive carbon, burn it to make carbon dioxide, feed this to a plant leaf on which light is shining—and the tracers start telling their story. There had long been dispute as to whether starch came first and was changed into sugar, or sugar came first and was changed into starch. Tracers have shown both theories to be wrong; the initial stage in food-making is neither starch nor sugar but a third something that has not yet been completely identified.

Of particular practical value has been the use of tracers in the chemical mixtures that are commercial fertilizers. Plant nutrition, especially under outdoor conditions, has always had more guesswork in it than we liked to admit. Tracers are beginning to tell us when we are wasting one chemical by putting in too much of it, or leaving the plant technologically unemployed by not giving it enough of another to let it work at full efficiency.

Important though tracers are, they are not the only way in which the new radioactive elements can be used. It has been known for some years that bombardment with X-rays and exposure to radium can change the germ-cells of animals and plants, producing hereditary changes in the offspring. The same kind of thing can now be done much more cheaply with radiations from our atomic ovens. What this may mean to genetical science and practical plant and animal breeding is for the future. It may be considerable. There are also possibilities in the radiation treatment of diseases. They may be of tremendous importance. But all we can say now is "*may* be."

Well, these are a few random samples of the research uses that are now being made of atomic energy and its products, the fissionable isotopes of the elements. They look impressive as they pass in review, but really they represent only a small fraction of the possibilities. There simply aren't enough workers now.

Here is where you come in. I have several times addressed you as the fortunate 40. Fortunate you are. Not because you are here, but because you have the intelligence and aptitude that have enabled you to pursue your education thus far with credit, and can reasonably be expected to make good use of your further opportunities.

Good fortune is yours. Responsibility is also yours, proportionate to your proven abilities. "For unto whomsoever much is given, of him shall much be required; and to whom men have committed much, of him they will ask the more."

Science News Letter, March 6, 1948

Science Service Radio

➤ LISTEN in to a discussion on brains of animals and humans on "Adventures in Science" over Columbia Broadcasting System at 3:15 p.m. EST Saturday, March 13. Dr. Ralph Gerard, professor of physiology of the University of Chicago, will be the guest of Watson Davis, director of Science Service. Dr. Gerard is going to explore the brain and try to tell us what makes us think.

Science News Letter, March 6, 1948

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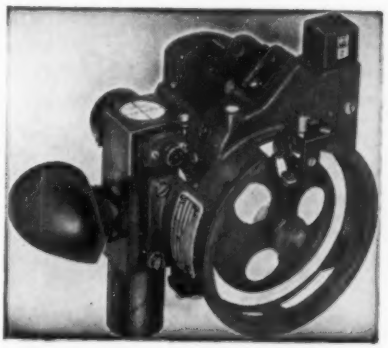

These Army Air Forces Bubble Sextants cost the Govt. about $125.00 each. A real bargain at our price of $12.50! Included with Bubble Sextant shipment is wooden Carrying Case, 5 spare waxed paper discs, flashlight with rheostat for night use (uses ordinary flashlight cells—not furnished) aux. 2-power Galilean Telescope, Allen wrench, 1 spare marking point. Wartime used, **BUT COMPLETELY REPAIRED, COLLIMATED AND PUT IN GOOD WORKING ORDER.** Light bulb has been tested—Bubble is in working condition. Because of wartime use, we make this guarantee: If not satisfied that Sextant is exactly as represented, return within 10 days and money will be refunded. Full directions for use accompany each shipment.

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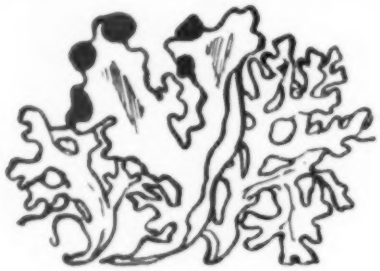
by Frank Thone



Martian Plants

➤ LICHENS got their first widespread airing over the radio recently, when some astronomical observations on Mars were at first "interpreted" by non-scientific writers as proofs that plant life at the level of lichens and mosses existed on our neighbor-planet. Most radio commentators, incidentally, mispronounced the word "lichens," making it rhyme with "kitchens"; the accepted pronunciation is exactly like that of the common verb, "likens".

The general climate of Mars has been most aptly compared to that which would exist at the top of a desert mountain twice the height of Everest. Nothing much there, it would seem, to support rich vegetation; certainly nothing to supply the manifold needs of a high human civilization, such as romancers have pictured on Mars. Lichens, however, might survive. They are the earth's toughest plants, first to appear on barren rock anywhere on earth, whether it be under the blazing Sahara sun or on the bleak nunataks of Greenland.

To imagine lichens on Mars, however, requires the acceptance of not one kind of plant but two. For a lichen is not a single plant like a buttercup or a mushroom; it is a fairly complex colony consisting of two quite different kinds of plants. It is a close web of colorless fungus threads holding within it swarms of one-celled lower plants known as algae. Often they are the same kind of plants that, growing alone, form green film on the bark of trees in moist places and are often though erroneously called "moss".

This intimate mutual entanglement of two different kinds of plants is often pointed out by biologists as a good example of what they term "symbiosis". That difficult-looking word is simply Greek for "living together." It is used to describe the close association of any two different species where both appear to derive some benefit, and both make their contributions to the common welfare. It doesn't always work out as ideally as that, but at any rate that is the theory.

These masses of fungi and algae that assume the distinctive forms we know as lichens are of three different main types. There are crustose or crust-forming lichens, that look like daubs of dried paint, some of them brilliant reds and yellows. There are foliose or leafy lichens; "rock tripe" is one common name applied to them. Finally, there are fruticose or twiggy lichens, best exemplified in the familiar reindeer moss, and in the "moss" that beards the murmuring pines and the hemlocks in the prelude to Longfellow's Evangeline.

Science News Letter, March 6, 1948

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BOTANY

Chlorophyll Has Disk Form

➤ CHLOROPHYLL, the green pigment in plants on which all life ultimately depends, comes in almost ultramicroscopic little disks or wafers, held together in groups of from 40 to 60 by a structureless matrix. Electron microscope studies confirming these structural details have been made by Drs. Sam Granick and K. R. Porter of the Rockefeller Institute for Medical Research, New York.

Easily visible under even moderate powers of the ordinary compound microscope are the saucer-shaped larger green bodies known as chloroplasts, which in turn are made of masses of these newly explored smaller units, known technically as "grana".

Existence of the grana was suggested a number of years ago, on the basis of studies with the highest powers of the ordinary microscope. However, because each individual granum has a diameter only slightly greater than one wavelength of visible light, they could be only just barely glimpsed by that method. Not until the enormously higher magnifications of the electron microscope became available could further research be carried on.

Drs. Granick and Porter used ground-up chloroplasts of spinach in their studies. Minute drops of the green suspension were placed on thin transparent films and carefully dried, then exposed to the electron microscope beam and photographed. Some of the preparations were given an exceedingly thin coat of gold, and this delicate metal "cast" used in further study and photography.

Diameters of the grana average about 6000 Angstroms, and their thickness is approximately one-eighth their diameter. (An Angstrom is the unit of measurement for light wavelengths; it is roughly a quarter-millionth of an inch.) Diameters of grana in different groups differ slightly, but all those within a given group are of uniform size.

Chemical studies on this exceedingly minute scale are of course difficult, but the two investigators are now endeavoring to determine in what part of the chlorophyll complex the light-capturing green and yellow pigments are held.

Details of the studies appear in the *American Journal of Botany* (Dec. 1947).

Science News Letter, March 6, 1948

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Books of the Week

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THE AFRICAN VIOLET (SAINTPAULIA)—Helen Van Pelt Wilson—*Barrows,* 191 p., illus., $2.50. For those who are fond of this house plant.

THE ATOM—Sir George Thomson—*Oxford,* 3d ed., 196 p., illus., $2.00. This book by the British Nobelist has been brought up to date by new chapters.

AUSTRALIAN BIRD LIFE—Charles Barrett—*Oxford,* 239 p., illus., $3.25. A readable account.

THE BACK AND ITS DISORDERS—Philip Lewin—*McGraw-Hill,* 157 p., illus., $2.50. Written by a professor of bone and joint surgery especially for persons who have backache or who are candidates for it and also for their relatives and friends.

A BIOCHEMICAL HYPOTHESIS OF THE GENESIS OF CANCER—Louis A. Pinck—*New York Academy of Sciences,* 17 p., paper, 50 cents.

BROADCAST OPERATORS HANDBOOK — Harold E. Ennes—*John F. Rider,* 265 p., illus., $3.30. Intended for the man in the control room—oldtimers as well as newcomers.

THE BUSINESS OF FARMING—Herrell DeGraff and Ladd Haystead—*Univ. of Oklahoma Press,* 244 p., illus., $3.00. A practical book with the emphasis strictly on profits, not romance.

CHILDHOOD AND DEVELOPMENT AMONG THE WIND RIVER SHOSHONE—D. B. Shimkin—*Univ. of California Press,* 37 p., paper, 75 cents.

CHROMATOGRAPHY—Harold G. Cassidy—*New York Academy of Sciences,* 325 p., illus., paper, $2.75.

DAVID LILIENTHAL: Public Servant in a Power Age—Willson Whitman—*Holt,* 245 p., $3.00. This biography is, naturally, also the story of TVA.

ELEMENTARY PHYSICAL METALLURGY: With Emphasis on Ferrous Metallurgy—Edward G. Mahin—*Chemical Publishing Co.,* 276 p., illus., $6.00. For plant workers as well as students.

ENGINEERING APPLICATIONS OF FLUID MECHANICS—J. C. Hunsaker and B. G. Rightmire—*McGraw-Hill,* 494 p., illus., $5.00. Of prime importance in understanding the action of compressors and turbines and also engines where controlled flow of air, fuel and combustion gases is essential.

EUROPE'S POPULATION IN THE INTERWAR YEARS—Dudley Kirk—*Columbia Univ. Press,* 302 p., illus., paper $3.50, Cloth $4.00. A League of Nations Publication prepared by Princeton University's Office of Population Research.

FROM FIJI THROUGH THE PHILIPPINES: With the Thirteenth Air Force—Benjamin E. Lippincott and others—*Macmillan,* 193 p., illus., $10.00. Illustrated by paintings by Robert A. Laessig, the book is of historic and artistic interest.

THE INTERPRETATION OF SPECTRA—William Mayo Venable—*Reinhold,* 200 p., $6.00.

A LABORATORY MANUAL OF COMPARATIVE VERTEBRATE EMBRYOLOGY—Allyn J. Waterman—*Holt,* 248 p., 63 pl., $3.50. For the undergraduate.

MATHEMATICS FOR ENGINEERS—Raymond W. Dull—*McGraw-Hill,* 2nd ed., 780 p., illus., $5.50. A reference book for engineers.

METAL PROCESS ENGINEERING— Norman E. Woldman—*Reinhold,* 291 p., illus., $5.00. For engineering students.

PHILOSOPHY IN A NEW KEY: A Study in the Symbolism of Reason, Rite and Art—Susanne K. Langer—*Penguin,* 248 p., paper, 35 cents. A reprint of a book originally published by Harvard University in 1942.

A PSYCHOLOGY OF GROWTH—Bert I. Beverly—*McGraw-Hill,* 235 p., $3.00. A book intended especially for nurses to help them understand their small charges, but also of great interest to parents who want their children to grow up to mentally healthy adulthood.

THE RADIO AMATEUR'S HANDBOOK—Headquarters Staff of the American Radio Relay League — *American Radio Relay League,* 25th ed., 608 p., illus., $2.00. A "must" for the "ham" or the person who aspires to be one.

RUDIMENTS OF CHEMISTRY: The Chemist's View of the Nature of Matter—Roland M. Whittaker—*Ronald,* 310 p., illus., $3.00. A college text.

SYMPOSIUM ON MEDICOLEGAL PROBLEMS—Samuel A. Levinson, Ed.,—*Lippincott,* 255 p., illus., $5.00. Under the co-sponsorship of the Institute of Medicine of Chicago and the Chicago Bar Association.

TOOL STEEL SIMPLIFIED: A Handbook of Modern Practice for the Man Who Makes Tools—Frank R. Palmer and George V. Luerssen—*Carpenter Steel Company,* 2d ed., 564 p., illus., $2.00.

Science News Letter, March 6, 1948

PHYSIOLOGY-PSYCHOLOGY

Tests Show Feeding Hungry Is Step to Less Fighting

➤ SUPPORT for the ERP idea that "feeding the hungry is a step in the promotion of peaceful living" comes from goat studies by Dr. J. P. Scott of the Roscoe B. Jackson Memorial Laboratory of Bar Harbor, Me.

The studies were made to test experimentally the effect of hunger on aggression and fighting in an animal. A flock of goats containing several age groups was used. Hungry animals, Dr. Scott found, do fight more than well-fed ones. But they fight chiefly in situations where they are already in the habit of fighting. The scientific conclusion was: "The training of individuals with regard to fighting is perhaps more important than hunger in determining whether or not they are aggressive."

True of goats, Dr. Scott asks whether it applies to humans.

The animals in the study were not undernourished or actually starving as might be the case in human populations. This, Dr. Scott points out, might change the reaction to hunger.

Comparing dominant and subordinate animals, Dr. Scott found that delayed feeding increases the amount of aggressive fighting in the dominant animals and causes the subordinate animals to take more punishment and thus lower the degree of dominance. But delayed feeding almost never causes aggression in the subordinate animals.

The dominance relationships between males, he also found, appears to be approximately but not entirely the same in cases of sexual frustration as in food frustration.

Considering the results of his studies in relation to the Marshall Plan and our activities in Europe, Dr. Scott suggests that our European policy should probably be considered primarily with regard to the effects of food as a reward and as a means of creating good will.

Science News Letter, March 6, 1948

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⚙ *MEAT TRAY, for use in oven or refrigerator, is a shallow dish with a high front end on which is a handle. A spiked sheet, that fits into the bottom of it, holds the meat while carving. Fingers are safe from the knife if cutting is made toward the high front end.*

Science News Letter, March 6, 1948

⚙ *MOTORIZED WHEEL chair, designed particularly for an infantile paralysis patient, moves forward, backward, or to the right or left, at a slow-walk pace under control of a switch on its arm. The switch can be flipped with a single finger.*

Science News Letter, March 6, 1948

⚙ *CONTROL BOX, for use in coal mines near mining operations, cuts automatically the current in the electric power line leading to work machines if an electrical failure occurs in any machine. It lessens the dangers of an explosion by preventing sparking.*

Science News Letter, March 6, 1948

⚙ *SLIDE PROJECTOR, for use in country schools and homes without electricity, uses a special mantle lamp that burns either gasoline or kerosene. It can be used with standard lantern slides or film strips, and gives a six-foot-square picture at 20 feet.*

Science News Letter, March 6, 1948

⚙ *VEGETABLE SHREDDER, which is also a slicer or grater of fruits as well as of raw or cooked vegetables, is attached to the wall and operated by the handle below, shown in the picture. Made of a plastic which is easily cleaned, the cutting is done by interchangeable revolving stainless steel disks.*

Science News Letter, March 6, 1948

⚙ *PORTABLE VENTILATOR, electrically operated, provides fresh air to men working in confined places. Housed in a lightweight aluminum casing, it operates standing on the floor or hung from above, and can be used either as a blower or an exhauster.*

Science News Letter, March 6, 1948

⚙ *ICE STICKS of a size suitable for sliding into a thermos bottle are made with a new tray which fits into the freezing compartment of the ordinary refrigerator. The rubber tray, recently patented, contains lengthwise compartments from which the icicles are easily removed.*

Science News Letter, March 6, 1948

⚙ *IRON-RESTING device, which can be quickly attached or detached from the ironing board, is an aluminum tray with a corrugated upper surface, and an asbestos pad under it to prevent scorching the ironing pad. Raised edges on three sides keep the iron from slipping off.*

Science News Letter, March 6, 1948

⚙ *NON-LOSABLE ERASER for the typist sticks in plain sight anywhere on the typewriter. This recently patented device has a small magnet in the center of the metallic sleeve of an ordinary disk-shaped eraser that holds it where put against iron or steel.*

Science News Letter, March 6, 1948

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Photographs: Cover, Westinghouse Electric Corp.; p. 147, p. 149, p. 151, Fremont Davis.